CLAIMS

We Claim:

1   1. An interface between an automation host and a plurality of tools

2   used to perform a processing step, the interface comprising:

3   a single communications and process behavioral connection interface

4   to the automation host; and,

5   a plurality of virtual host interfaces, each virtual host interface from

6   the plurality of virtual host interfaces providing a communications and

7   process behavioral interface to one of the tools in the plurality of tools;

8   wherein the automation host can control and coordinate operation of

9   all tools in the plurality of tools via the single communications and process

10   behavioral connection interface.

1   2.   An interface as in claim 1 wherein a number of virtual host

2   interfaces is variable depending upon a number of tools in the plurality of

3   tools.

1   3. An interface as in claim 1 wherein the plurality of virtual host

2   interfaces implement different communications and process behavioral

3   interface for different tools from the plurality of tools.

1   4. An interface as in claim 1 wherein the single communications and

2   process behavioral connection interface makes the plurality of tools appear

3   to the automation host as a single tool.

1   5. An interface as in claim 1 additionally comprising a state machine

2 scenario determinator that aggregates process state models for the plurality

3 of tools into a single process state model.

1   6. An interface as in claim 1 additionally comprising a state machine

2 scenario determinator that aggregates control state models for the plurality

3 of tools into a control process state model.

1   7. An interface as in claim 1 additionally comprising a state machine

2 scenario determinator that aggregates port state models for the plurality of

3 tools into a single port state model.

1   8. An interface as in claim 1 wherein a process variables set and

2 variable identification numbers of tools from the plurality of tools are

3 aggregated into a single process variable set and variable identification

4 number range for the plurality of tools.

1   9. An interface as in claim 1 additionally comprising a host

2 concentrator that aggregates communication message sets of individual

3 tools from the plurality of tools into a single communications message set for

4 the plurality of tools.

1   10. An interface in 1 wherein each virtual host interface from the

2 plurality of virtual host interfaces is compliant with the Semiconductor

3 Equipment Manufacturers Institute (SEMI) generic equipment model

4   (GEM) interface requirements.

1   11. An interface in 1 wherein the single communications and process

2   behavioral connection interface to the automation host is compliant with the

3   Semiconductor Equipment Manufacturers Institute (SEMI) generic

4   equipment model (GEM) interface requirements.

1   12. A method for connecting an automation host to a plurality of tools

2   used to perform a processing step, the method comprising the following

3   steps:

4   (a) providing a separate communications and process behavioral

5   interface to each tool in the plurality of tools; and,

6   (b) providing a single communications and process behavioral

7   connection interface to the automation host, including the following substep:

8   (b.1) allowing the automation host to control and coordinate

9   operation of all tools in the plurality of tools via the single communications

10 and process behavioral connection interface.

1   13.   A method as in claim 12, wherein in step (a) a number of virtual

2   host interfaces is variable depending upon a number of tools in the plurality

3   of tools.

1   14. A method as in claim 12, wherein in step (a) the plurality of

2   virtual host interfaces implement different communications and process

3   behavioral interface for different tools from the plurality of tools.

1   15. A method as in claim 12, wherein in step (b) the single

2   communications and process behavioral connection interface makes the

3   plurality of tools appear to the automation host as a single tool.

1   16. A method as in claim 12, additionally comprising the following

2   step:

3   (c) aggregating process state models for the plurality of tools into a

4   single process state model.

1   17. A method as in claim 12, additionally comprising the following

2   step:

3   (c) aggregating control state models for the plurality of tools into a

4   single control state model.

1   18. A method as in claim 12, additionally comprising the following

2   step:

3   (c) aggregating port state models for the plurality of tools into a single

4   port state model.

1   19. A method as in claim 12, additionally comprising the following

2   step:

3   (c) aggregating a process variables set and variable identification

4   numbers of tools from the plurality of tools into a single process variable set

5   and variable identification number range for the plurality of tools.

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1   20. A method as in claim 12, additionally comprising the following

2   step:

3   (c) aggregating communication message sets of individual tools from

4   the plurality of tools into a single communications message set for the

5   plurality of tools.

1   21. A method in 12 wherein in step (a) each separate communications

2   and process behavioral interface is compliant with the Semiconductor

3   Equipment Manufacturers Institute (SEMI) generic equipment model

4   (GEM) interface requirements.

1   22. A method in 12 wherein in step (b) the single communications and

2   process behavioral connection interface to the automation host is compliant

3   with the Semiconductor Equipment Manufacturers Institute (SEMI) generic

4   equipment model (GEM) interface requirements.